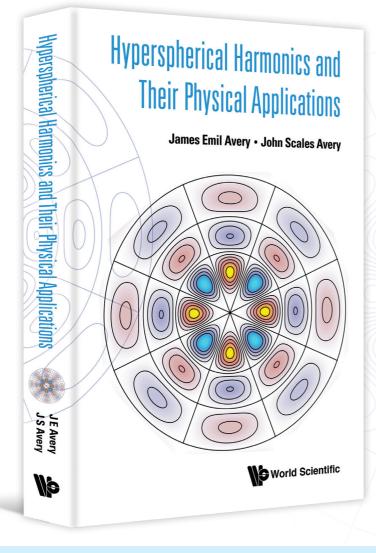


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Hyperspherical Harmonics and Their Physical Applications

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Just as spherical harmonics are an indispensable tool for representing single-particle wave-functions in 3D, hyperspherical harmonics can capture the highdimensional geometry of interacting multi-particle ensembles in few-body systems. They have been extremely useful in nuclear physics, reactive scattering, and for evaluating difficult molecular electron repulsion integrals in quantum chemistry.

This book aims to change the theory of hyperspherical harmonics from an esoteric field, mastered by specialists, into an easily-used tool with a place in the working kit of all theoretical physicists, theoretical chemists and mathematicians.

The theory presented here is accessible without the knowledge of Lie-groups and representation theory, and can be understood with an ordinary knowledge of calculus.

With programs and exercises designed for teaching and practical use.

- Exercises are included at the end of each chapter
- The computer programs and electronic versions of the exercises and solutions are available at http://harmonics.kvante.org.

Readership: Researchers and students of theoretical physics, theoretical chemistry, and mathematics

Browse sample chapter at http://bit.ly/hyperspherical

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About the Authors



James Emil Avery obtained his M.Sc. and Ph.D. in mathematics and computer science from the University of Copenhagen. He is presently an assistant professor at the Niels Bohr Institute, University of Copenhagen, specializing

in computational methods in physics and chemistry. Dr. J.E. Avery's work applies methods from computer science and mathematics to few- and many-body problems in quantum chemistry and physics.



John Scales Avery studied theoretical physics at MIT and the University of Chicago, and received his Ph.D. in theoretical chemistry from the University of London. He is presently Associate Professor

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